

TITLE

CORN PLANTS AND PRODUCTS WITH IMPROVED OIL COMPOSITION

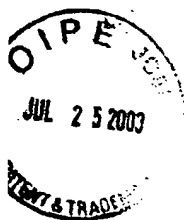
FIELD OF THE INVENTION

5 This invention relates to corn (*Zea mays* L.) seed and grain having a significantly higher oleic acid content by virtue of heritable genes for increased oil and oleic acid content and/or lowered levels of linoleic acid. The present invention also relates to the production of high oil, high oleic grain, plants and plant parts grown from such grain and uses of such improved grain.

TECHNICAL BACKGROUND OF THE INVENTION

15 Corn oil is comprised primarily of even-numbered carbon chain fatty acids. The distribution of fatty acids in typical corn oil is approximately 12% palmitic acid (16:0), 2% stearic acid (18:0), 25% oleic acid (18:1), 60% linoleic acid (18:2), and 1% linolenic acid (18:3). Palmitic and stearic acids are referred to as saturated fatty acids because their carbon chains contains only single bonds and the carbon chain is "saturated" with hydrogen atoms. Oleic, linoleic, and linolenic acids contain one, two, and three double bonds respectively, and are referred to as unsaturated fatty acids. Fatty acids in corn oil nearly always occur esterified to the hydroxyl groups of glycerol, thus forming triglycerides. Approximately 99% of refined corn oil is made up of triglycerides; Corn Oil, Corn Refiners Association, Inc., 1001 Connecticut Ave., N.W., Washington, DC 20036, 1986, 24 pp.

30 When exposed to air, unsaturated fatty acids are subject to oxidation which causes the oil to have a rancid odor. Oxidation is accelerated by high temperatures, such as in frying conditions. The rate of oxidation is proportional to the number of double bonds in the fatty acids. Thus, linoleic acid with two double bonds is more unstable than oleic acid which has only one double bond. Oxidation reduces the shelf life



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